

**REMARKS**

Claims 1-12 and 14 continue to be the pending claims in the application. Claims 15-21 have been added to better define the subject matter of the invention. No new matter has been added by the new claims. Support for new claims 15 and 16 is found on page 8, lines 10-15; for new claims 17-18 on page 11, lines 11-14; for claim 19, on page 19, lines 4-5 and 9 and in Tables 1 and 3; for claims 20-21, in Table 1 and Table 3 and in particular Test 3 of Table 1. Reconsideration of the application in light of the remarks, which follow, is respectfully requested.

**Claim Rejections Under 35 U.S.C. §103**

Claims 1, 6, 8-11 and 14 stand rejected under 35 U.S.C §103(a) as being allegedly unpatentable over SUEYOSHI (JP 07237405) and further in view of BEERS (U.S. Patent No. 5,491,196) and CARTER (U.S. Patent No. 5,807,918). The Examiner contends that the prior art of SUEYOSHI discloses a tire construction in which an intermediate reinforcing layer or insulation rubber layer is disposed between an inner elastomeric layer or innerliner and carcass and that the insulation rubber layer is formed of a mixture of polyisoprene rubber and a diene rubber. The Examiner contends that while SUEYOSHI fails to describe the specific styrene butadiene being used, one of ordinary skill in the art would have found it obvious to use a solution polymerized styrene butadiene, such as those shown by BEERS. The Examiner further contends that while SUEYOSHI fails to include the properties of the carbon black, this would have been obvious from CARTER.

The Examiner also rejected claims 1, 2, 6-11 and 14 under 35 U.S.C. §103(a) as being allegedly unpatentable over HATTORI (JP 10297209) and further in view of BEERS and CARTER. The Examiner alleges, with reference to Fig. 2 of HATTORI, that

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HATTORI is directed to a pneumatic tire construction for heavy loads comprising an innerliner, a carcass ply formed of steel reinforcing elements, and an intermediate reinforcement layer disposed between the innerliner and carcass and that the reinforcement layer is a blend of natural rubber and an additional diene rubber, such as styrene butadiene rubber (paragraph 6). The Examiner then contends that although HATTORI fails to describe the specific styrene butadiene used, it would have been obvious to the skilled artisan at the time the invention was made to use solution polymerized styrene butadiene from BEERS and that the carbon black content would have been obvious from CARTER.

The Examiner rejected claims 3 and 5 under 35 U.S.C. §103(a) as being allegedly unpatentable over either or of (a) SUEYOSHI, BEERS and CARTER or (b) HATTORI, BEERS, and CARTER and further in view of MATERNE (U.S. Patent No. 6,156,822). The Examiner states that while SUEYOSHI and HATTORI fail to suggest the use of additional filler components, in addition to carbon black, it is well known in the art to do so, as shown by MATERNE in which carbon black, precipitated silica and other filler containing hydroxyl groups are included.

The Examiner rejected claim 4 under 35 U.S.C. §103(a) as being allegedly unpatentable over either one of (a) SUEYOSHI, BEERS, CARTER and MATERNE or (b) HATTORI, BEERS, CARTER and MATERNE, and further in view of NAKAMURA (U.S. Patent No. 6,333,375). The Examiner asserts that while MATERNE fails to describe the BET specific surface area for secondary fillers, this would have been obvious to the skilled artisan further looking to NAKAMURA.

The Examiner rejected claim 7 under 35 U.S.C. §103(a) as being allegedly unpatentable over SUEYOSHI, BEERS and CARTER and further in view of KING (U.S. Patent No. 3,563,928) and optionally in view of HATTORI. The Examiner contends that SUEYOSHI teaches the inclusion of well-known additives but does not specifically teach the inclusion of metal salts. The Examiner alleges that the inclusion of metal salts would have been obvious from KING.

The Examiner rejected claim 12 under 35 U.S.C. §103(a) as being allegedly unpatentable over either one of (a) SUEYOSHI, BEERS, and CARTER or (b) HATTORI, BEERS, and CARTER, and further in view of GROS (U.S. Patent No. 3,884,993). The Examiner alleges that SUEYOSHI and HATTORI describe the inclusion of carbon black and well known additives and that while these references fail to describe the use of kaolin (clay), kaolin is well known in the art as seen in GROS. Applicants respectfully traverse all grounds of rejection.

**THE DISCLOSURES OF THE CITED ART DO NOT TEACH OR  
SUGGEST THE CLAIMED INVENTION**

**1. The Invention Of The Application**

The present invention relates to a tire for motor vehicles bearing heavy loads comprising (a) a carcass ply based on metal cords and an elastomeric carcass layer coating the cords, (b) an inner elastomeric layer (or “inner layer”) which defines the radially inner face of the tire, thereby circumscribing the inner space of the tire, and which protects the carcass ply from diffusion of air coming from the inner space of the tire, and (c) an intermediate reinforcement layer (or “intermediate layer”) located between the carcass ply and the inner layer. The intermediate reinforcement layer is formed from a very specific rubber composition which makes it possible to largely improve the life of

the tires bearing heavy loads (*see* page 7, lines 2-5), which is shown in the comparative Examples of Table 2 and Table 4: *see* in particular the “Life of tire” values for Tests 3-6 according to the invention, compared to control Tests 1-2 in Table 2; *see also* Tests 9-10 according to the invention compared to control Tests 7-8 in Table 4.

In order to achieve such improved results, the composition must include (i) a natural or synthetic specific polyisoprene (having a majority of chains with cis-1, 4 bonds), (ii) a solution copolymer of diene monomer(s) and vinyl aromatic monomer(s) having the relationships defined in the claims, and (iii) 25 to 85 phr of a carbon black having given values of BET and DBP. Note that, in the absence of only one of these claimed elements, the goal of improved endurance is not achieved, *see, e.g.* Test 1 (page 16, line 21), absence of solution copolymer; Test 2 (page 17, line 1-2), absence of polyisoprene; Test 7 (page 20, line 8) absence of solution copolymer; and Test 8 (page 20, lines 9-10) inappropriate carbon black.

## **2. The Cited Prior Art**

The disclosure of SUEYOSHI describes an intermediate reinforcement layer which is made of 3-20 parts of trans 1,4 polyisoprene and 80-97 parts of other diene rubber (*see* Abstract). The diene rubber can be selected among known diene rubbers (*see* paragraph 10) such as natural rubber, styrene-butadiene rubber, polybutadiene rubber or even polyisoprene rubber. SUEYOSHI has only one working example which shows that the other diene rubber is a natural rubber, i.e. SUEYOSHI teaches using a mix of two polyisoprene rubbers, trans-1, 4 polyisoprene mixed with natural rubber, another polyisoprene.

The disclosure of HATTORI also describes an intermediate reinforcement rubber layer (inner face protective layer 6A) which contains essentially natural rubber (70% or more). The rubber layer can contain any kind of synthetic rubber such as polyisoprene, polybutadiene, styrene butadiene, etc. Only one working example is given and natural rubber constitutes 100% of the rubber layer in the Example. Accordingly, HATTORI relates to an intermediate rubber layer comprising at least 70% of natural rubber and not more than 30% of another diene rubber.

The disclosure of BEERS describes a composition for an inner layer comprising a mixture of butyl rubber and a solution SBR having a specific Tg range. In a preferred embodiment of the present invention, butyl rubber is also the major component of the inner layer (*see* page 3, lines 1-2). It is well known by the skilled artisan that butyl rubbers are not polyisoprene rubbers.

The disclosure of CARTER describes a method for bonding at least two elastomeric substrates together, wherein one substrate is a tire casing and another substrate is a tire tread using an aqueous color changeable adhesive. Numerous carbon blacks are mentioned in CARTER at column 3, line 50 to column 4, line 4.

### 3. There Is No *Prima Facie* Case Of Obviousness

The cited references do not support a *prima facie* case of obviousness, no matter how they are combined. To establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation in the cited references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the combined references must teach or suggest

all the claimed limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and must not be based on the applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991); MPEP § 2142.

The Examiner rejects claims 1,6, 8-11 and 14 under 35 U.S.C. § 103(a) as being unpatentable over SUEYOSHI and further in view of BEERS and CARTER. The Examiner also rejects claims 1, 2, 6-11 and 14 under 35 U.S.C. § 103(a) as being unpatentable over HATTORI and further in view of BEERS and CARTER. Because the arguments relating to both of these rejections are similar, they shall be discussed together below.

The Examiner contends that SUEYOSHI and HATTORI teach a composition for an intermediate layer comprising a polyisoprene. The Examiner then contends that while SUEYOSHI and HATTORI do not teach the inclusion of a solution copolymer, BEERS provides this teaching. Applicants respectfully disagree. There is no motivation or suggestion in SUEYOSHI or HATTORI or knowledge generally available to the skilled artisan to modify the disclosed rubber composition of the intermediate reinforcement layer of SUEYOSHI or HATTORI with BEERS to make the claimed rubber composition of the intermediate layer.

As noted above, neither SUEYOSHI or HATTORI teach combining a polyisoprene having a majority of chains with cis-1, 4 bonds with a solution copolymer (such as SBR) of diene and vinyl aromatic monomers, as presently claimed. And Applicants wish to respectfully point out that the Examiner's reliance on BEERS to provide this teaching is misplaced. As noted above, the disclosure of BEERS relates to a

composition for an inner layer comprising a butyl rubber and a solution SBR. Butyl rubbers are not polyisoprene rubbers. There is generally no butyl rubber in an intermediate layer and there is generally no natural rubber in an inner layer. The skilled artisan would not have thought to modify SUEYOSHI or HATTORI with the teaching of BEERS because BEERS relates to compositions for inner layers not for intermediate layers like SUEYOSHI and HATTORI. Inner layers and intermediate layers have very different functions and are based upon different formulations and elastomers. There is no reason, except by hindsight, to combine SUEYOSHI or HATTORI with BEERS, and there would be no expectation of success in making such a combination.

“It is difficult but necessary that the decision-maker forget what he or she has been taught... about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art.”

M.P.E.P. §2141.01(III)(Content of the Prior Art is Determined at the Time the Invention Was Made to Avoid Hindsight”).<sup>1</sup>

CARTER does not make up for the deficiencies of SUEYOSHI or HATTORI, taken alone or in combination with BEERS. In fact, CARTER does not provide any teaching whatsoever relating to compositions comprising polyisoprenes or solution copolymers. Rather, CARTER discloses a method for bonding at least two elastomeric substrates together, wherein one of the substrates is a tire casing and the other is a tire tread, using an aqueous color changeable adhesive comprising carbon black. The Examiner has relied upon CARTER to provide the teaching of the specific carbon black

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<sup>1</sup> Citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 154, 220 USPQ 303, 313 (Fed. Cir. 1983) cert. denied, 469 U.S. 851 (1984) (emphasis added).  
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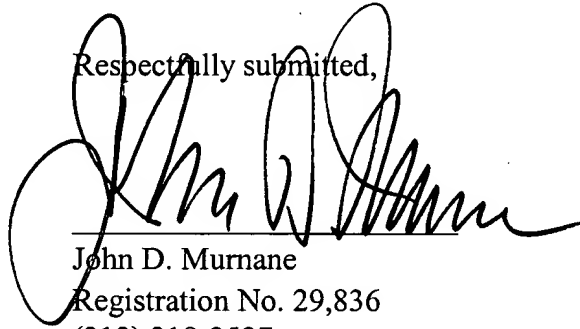
of the present claims, not disclosed in either SUEYOSHI or HATTORI. However, CARTER discloses numerous carbon blacks, *see* column 3, line 50 to column 4, line 4. And many of the carbon blacks disclosed by CARTER are not useful in the present invention. Therefore the skilled artisan looking to CARTER would not appreciate which specific carbon black would be useful for modifying SUEYOSHI or HATTORI to make the claimed invention. Moreover, because BEERS fails to make up for the deficiencies of SUEYOSHI or HATTORI with respect to the solution copolymer, the inclusion of the teachings of CARTER, which is relied upon to only provide the teaching of additional fillers, is insufficient to make up for the deficiencies.

Because all the other rejections of the remaining claims are based on either SUEYOSHI, BEERS and CARTER or HATTORI, BEERS and CARTER, and further in view of additional references, Applicants assert that the remaining rejections have been addressed by the remarks above. Therefore, Applicants respectfully request that the rejections of all the claims under 35 U.S.C. § 103(a) be withdrawn.



In view of the foregoing remarks, favorable reconsideration and allowance of all pending claims is earnestly solicited. Applicants' undersigned attorneys may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John D. Murnane", is written over a horizontal line.

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